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June 18, 2003
PY-CEI/NRR-2714L

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
Special Report: Inoperable Post Accident Monitoring Instrumentation

Ladies and Gentlemen:

In accordance with the provisions of Perry Nuclear Power Plant Technical Specification 3.3.3.1, the enclosed Special Report is being submitted to notify the Nuclear Regulatory Commission of an inoperable channel of Post Accident Monitoring Instrumentation. The report documents Post Accident Monitoring equipment which has been out-of-service for greater than 30 days.

There are no regulatory commitments contained in this letter or its attachments. If you have questions or require additional information, please contact Mr. Vernon K. Higaki, Manager-Regulatory Affairs, at (440) 280-5294.

Very truly yours,

for William R. Kanda
Enclosure

cc: NRC Region III Administrator
NRC Resident Inspector
NRR Project Manager

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SPECIAL REPORT

INOPERABLE POST ACCIDENT MONITORING INSTRUMENTATION

The primary purpose of the Perry Nuclear Power Plant (PNPP) post accident monitoring instrumentation is to display plant variables required to be monitored by the control room operators during accident scenarios. The primary containment/drywell area gross gamma radiation monitors, which comprise a portion of the post accident radiation monitoring system instruments, are provided to monitor for potential significant radiation releases, and to aid in the assessment of releases for determining site emergency action levels. PNPP has two multi-channel area radiation monitors manufactured by Kaman Instruments, each consisting of one high range containment detector and one high range drywell detector.

One drywell channel of the primary containment/drywell area gross gamma radiation monitors is expected to be inoperable for greater than the allowed outage time permitted by Technical Specifications (TS). In accordance with TS 3.3.3.1 Action B.1, if the required channel is not restored within 30 days, a special report is required to be submitted within an additional 14 days detailing root cause determination of the inoperable channel and proposed restorative actions. Action B.1 was entered on May 28, 2003, when the plant entered Mode 2, Startup. Accordingly, this special report is submitted in accordance with TS 3.3.3.1 Action B.1.

Channel inoperability for drywell channel 1 (1D19K0200B) for the division 2 drywell high range post accident area monitor was identified by the indication of a high voltage power supply (HV P/S) failure alarm on April 25, 2003, during refuel outage nine (RFO9). The high voltage power supply card was replaced and indications returned to normal. On May 11, 2003 another high voltage power supply failure alarm came in and the HV P/S card was replaced. On May 16, 2003 it was confirmed that the HV P/S failure alarm problem was external to the card by swapping the channel #1 and #2 HV P/S cards and noting that the alarm did not change with the cards. On May 19, 2003 the electrical resistance was measured for both the signal and high voltage cables. It was determined that the HV mineral insulated cable was shorted between the center conductor and the inner shield inside containment. On May 23, 2003 an effort was made to further isolate the location of the short by measuring the cable resistance between the containment penetration and the drywell detector by removing the cable connections at the detector. When this was done it was confirmed that the short was not in the detector but in the cable. It was also noted that the short was intermittent during the manipulation of the HV cable connector. It was concluded the cable is defective due to an insulation resistance break down.

Evaluation of available repair or replacement options led to several considerations. The cable for this instrument is supplied in given lengths, and are not amenable to field repairs, such as splices and re-termination. The original supplier of the cable no longer manufactures it. An alternate supplier has been identified that makes an equivalent cable with different design. However, the lead-time is a minimum of four months. No other similar cables of sufficient lengths and connector configurations were available to meet the requirements for this application.

Review of the activities necessary for the replacement of the cable presented several concerns. The cable replacement would necessitate removing the old cable from the drywell cable penetration and installing the new cable, with the potential for damaging the other cable within the same penetration that is functioning properly. The radiation exposure for the replacement of the cable during RFO9 was estimated at 2 person-rem, due to the extensive labor involved in the replacement and the dose rates in the areas where the work must be performed.

The Perry senior management team considered several options (e.g., cable replacement, cable repair, and monitor relocation) as potential solutions to this issue. It was concluded that this work effort will be planned for RFO10, considering the lead time to procure the replacement cable, the scope of the work necessary and the significant radiation exposure that would have resulted by performing the work during RFO9. Planning the repair for RFO10 will allow for appropriate work and ALARA planning considerations as well as parts acquisition. This decision means that one drywell area post-accident monitor as well as both containment area post-accident monitors will be operable for Cycle 10, an estimated two-year time period.

The containment area post-accident monitors will provide radiation monitoring of the containment atmosphere while one channel of the drywell area gross gamma radiation monitor is inoperable. In the event of an accident, these instruments will provide information necessary to assess plant conditions. Conventional methods of sampling and analysis of reactor water through normal sampling points or the post-accident sample system are also available to provide other indications of fission barrier loss, in the event of an accident. Emergency planning will consider the status of the monitoring equipment, and develop contingencies to ensure emergency coordinators are aware of available alternate monitoring methods should the remaining drywell detector become unavailable.

During Cycle 10, the PNPP staff will develop a plan for restoring the inoperable drywell radiation monitor. Since any repair would require drywell entry, these activities would require an outage of sufficient length to accomplish, or they could be accomplished during the next refueling outage, scheduled for early 2005.